Allied Chemical
An ALLIED Company

MURIATIC ACID

PRODUCT SAFETY DATA SHEET

#1230

A. GENERAL INFORMATION

TRADE NAME (COMMON NAME OR SYNONYM)	☒ C.A.S. NO. ☐ ALLIED PRODUCT CODE #
MURIATIC ACID	7647-01-0

CHEMICAL NAME: Hydrochloric Acid

FORMULA	MOLECULAR WEIGHT
28 - 35% HCl in water	36.46 for anhydrous HCl

ADDRESS (No., STREET, CITY, STATE AND ZIP CODE)

ALLIED CHEMICAL
P. O. Box 1139R
Morristown, NJ 07960

CONTACT	PHONE NUMBER	ISSUED DATE	REVISED DATE
Director, Product Safety	(201) 455-4157	June, 1980	July, 1982

B. FIRST AID MEASURES

EMERGENCY PHONE NUMBER: (201) 455-2000

Eyes — Immediately flush with water, continuing for 20 to 30 minutes. Get medical help. Speed is essential.

Skin — Immediately flush with water, continuing for at least 15 minutes, and removing contaminated clothing. Get medical help.

Inhalation — Promptly remove to fresh air. (Rescuers may in some situations be advised to wear personal protective equipment — see Section E.) If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen, provided a qualified operator is available. Get prompt medical attention.

Ingestion — If conscious and free of convulsions, give large amounts of water immediately. Do not induce vomiting. Give a nongassing neutralizer such as milk of magnesia. Do not give carbonates, bicarbonates, chalk. Get prompt medical attention.

C. HAZARDS INFORMATION

HEALTH

INHALATION — Inhalation of vapor or mist can cause irritation or corrosive burns to the upper respiratory tract. Symptoms may include choking, coughing, headache, or dizziness. Lung irritation and pulmonary edema can also occur, sometimes delayed. (continued, Section K.)

INGESTION
Can cause irritation and burns to gastrointestinal tract. May perforate in extreme cases. Asphxia may occur from edema of the larynx. Dehydration is the chief hazard with concentrated material. For diluter solutions, the animal LD_{50} (rabbit) = 900mg/kg may be pertinent — moderately toxic — Reference (a).

SKIN
Liquid contact: may cause severe burns. Solution contact: irritation or burns. Vapor contact: irritation or burns. Mist contact: irritation.

EYES
Both liquid and vapor can cause irritation, corneal burns, and conjuctivitis. Permanent damage with loss of sight can occur. — Reference (b).

PERMISSIBLE CONCENTRATION: AIR (SEE SECTION J) — 5 ppm ceiling (as HCl, OSHA) — BIOLOGICAL

TLV: same (ACGIH)

UNUSUAL CHRONIC TOXICITY
Gastritis and chronic bronchitis have been reported —Reference (c).

C. HAZARDS (Cont.)

FIRE AND EXPLOSION

FLASH POINT °C	AUTO IGNITION TEMPERATURE °C	FLAMMABLE LIMITS IN AIR (% BY VOL.)
Not flammable ☐ OPEN CUP ☐ CLOSED CUP	Not applicable	Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS

See Hazardous Decomposition Products, Section G. Flammable and potentially explosive hydrogen gas is generated from reaction with most metals.

D. PRECAUTIONS/PROCEDURES

FIRE EXTINGUISHING AGENTS RECOMMENDED

If involved in a fire, use water. Also neutralization technique, see "Spill or Leak".

FIRE EXTINGUISHING AGENTS TO AVOID

SPECIAL FIRE FIGHTING PRECAUTIONS

Wear self-contained breathing apparatus with full facepiece and full protective clothing. Use water spray to cool fire-exposed containers. Do not splash this material onto other personnel.

VENTILATION

Sufficient to reduce acid mist and hydrogen chloride gas concentrations to current permissible levels. Packaging and unloading areas and open processing equipment may require mechanical exhaust systems or local exhaust. For details on applications, see Reference (b).

NORMAL HANDLING

Do not get in eyes, on skin, on clothing. Do not breathe vapor or mist. Use only with adequate ventilation. Keep away from metals and other incompatible chemicals.

STORAGE

Store in dry, well-ventilated area away from heat and out of the sun. Store away from incompatible materials. Diking of storage tanks is recommended.

SPILL OR LEAK

Dilute small spills or leaks cautiously with plenty of water. Neutralize residue with alkali such as soda ash, lime, or limestone. Adequate ventilation is required for soda ash or limestone due to release of carbon dioxide gas. For major spills, keep people without protective equipment away. Contain the acid by diking the spill with soil or clay. Recover the acid if possible. Personnel should wear full personal protective equipment. (See Section I for disposal methods). Attempt to keep out of sewer. Any release to the environment of these products may be subject to Federal and/or state reporting requirements. Check with appropriate agencies.

SPECIAL: PRECAUTIONS/PROCEDURES/LABEL INSTRUCTIONS

To prevent ignition of hydrogen gas generated by muriatic acid contact with most metals, smoking, flames, and sparks should not be permitted in storage or handling areas. Medical surveillance (see Reference b) and employee education are recommended for workers with this acid. Label signal word: DANGER!

E. PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION

Where required, use a respirator approved by NIOSH for hydrogen chloride gas and/or mist, as applicable. Some exposures may require self-contained breathing apparatus, generally with full facepiece, or supplied-air respirator, generally with full facepiece, helmet, or hood. For details and other choices, see Reference (b).

EYES AND FACE

As a minimum, wear hard hat, chemical safety goggles, and full facepiece, where not obstructed by the respirator in use, if any. Do not wear contact lenses. In exposure to mists, chemical safety goggles are also necessary.

HANDS, ARMS, AND BODY

Prevent any contact of liquid with body. As a minimum, wear acid-resistant apron, protective clothing, boots, and gauntlet gloves for routine product-handling use. For increased protection, include acid-resistant trousers and jacket, and supplied-air acid hood. Diluted solutions also require such protection – details, see Reference (b).

OTHER CLOTHING AND EQUIPMENT

Eye-wash and quick-drench shower facilities, protected from freezing, should be available where this acid or diluted solution of it is stored or handled.

F. - PHYSICAL DATA

MATERIAL IS (AT NORMAL CONDITIONS):	APPEARANCE AND ODOR	
☒ LIQUID ☐ SOLID ☐ GAS ☐ _____	Colorless to light yellow liquid, pungent odor.	
BOILING POINT* 20° Be': 83 °C 22 Be': 61 C MELTING POINT* 20° Be': – 63 °C 22° Be': – 86 °C	SPECIFIC GRAVITY (H_2O = 1) 20 Be' - 1.16 22 Be' - 1.18	VAPOR DENSITY (AIR = 1) 1.27
SOLUBILITY IN WATER (% by Weight) complete	pH 1% solution; pH = 0.8	VAPOR PRESSURE (mm Hg at 20° C) ☒ (PSIG) ☐ 20 Be' - 25 22 Be' - 84
EVAPORATION RATE (Butyl Acetate = 1) ☒ (Ether = 1) ☐ Less than 1 (estimated)	% VOLATILES BY VOLUME (At 20° C) 28% - 35% (HCl only)	(*) 20 Be' - 31.5% HCl 22 Be' - 35.2% HCl

G. REACTIVITY DATA

STABILITY	CONDITIONS TO AVOID
☐ UNSTABLE ☐ STABLE	

INCOMPATIBILITY (MATERIALS TO AVOID)

Most metals: see Section C, Fire. Alkalis, metallic oxides, amines, esters, and certain other organics: propiolactone (beta) (Reference e), propylene oxide (ibid): cause exothermic reactions, possibly violent. Carbonates, cyanides, sulfides: yield toxic gases. Water-reactive materials, such as sulfuric acid, oleum, and acetic anhydride: cause exothermic reaction.

HAZARDOUS DECOMPOSITION PRODUCTS

Hydrogen chloride vapors released normally at ambient, but in increasing amounts at higher temperatures.

HAZARDOUS POLYMERIZATION	CONDITIONS TO AVOID
☐ MAY OCCUR ☒ WILL NOT OCCUR	

H. HAZARDOUS INGREDIENTS (Mixtures Only)

MATERIAL OR COMPONENT/C.A.S. #	WT. %	HAZARD DATA (SEE SECT. J)
NOT APPLICABLE		

I. ENVIRONMENTAL

DEGRADABILITY/AQUATIC TOXICITY

Aquatic toxicity:
282 ppm/96 hr/mosquito fish/TL_m/fresh water.
100 - 330 ppm/48 hr/shrimp/LC_{50}/salt water. — Reference (f)

OCTANOL/WATER PARTITION COEFFICIENT

EPA HAZARDOUS SUBSTANCE? [X] YES [ ] NO IF SO, REPORTABLE QUANTITY: 17,850 # (28 wt% acid) / 13,880 # (36 wt% acid) — 40 CFR 116.117

WASTE DISPOSAL METHODS (DISPOSER MUST COMPLY WITH FEDERAL, STATE AND LOCAL DISPOSAL OR DISCHARGE LAWS)

Waste Muriatic Acid (28 or 36 wt %) should be cautiously diluted with water and neutralized with an alkali. Neutralized waste must be disposed of in accordance with applicable disposal regulations. Waste may have to be disposed of by an approved contractor.

RCRA STATUS OF UNUSED MATERIAL:
EPA Hazardous Waste No. D002 (corrosive) if discarded. — 40 CFR 261.22

J. REFERENCES

PERMISSIBLE CONCENTRATION REFERENCES

(1) OSHA regulation for airborne contaminants, 29 CFR 1910. 1000 (1981).
(2) "Threshold Limit Values for Chemical Substances . . .", 1981, Am. Conf. of Governmental Industrial Hygienists, Cincinnati 45201.

REGULATORY STANDARDS

D.O.T. CLASSIFICATION: Corrosive material — 49 CFR

DOT ID Number: UN 1789

FDA regulations apply to the use of food grade product (21 CFR).

GENERAL

(a) NIOSH, Registry of Toxic Effects of Chemical Substances, 1979, Accession No. MW 4025 000, "Hydrochloric Acid", PB 81-154478, Nat. Tech. Info. Service, Springfield, VA 22161.
(b) NIOSH/OSHA, "Occupational Health Guideline for Hydrogen Chloride", 1978, Govt. Printing Office, Washington 20402.
(c) Documentation of the Threshold Limit Values, 4th Ed., 1980, address, Reference (2).

K. ADDITIONAL INFORMATION

(d) AMIA Tech. Guide #7, Handbook of Hazardous Materials, Am. Mutual Insurance Alliance, 1974, Chicago 60606.
(e) NFPA Manual 491M, "Manual of Hazardous Chemical Reactions", 1975, Nat. Fire Protection Assoc., Boston 02210.
(f) Allied Corporation Wall Safety Chart for Muriatic Acid.
(g) Allied Corporation Technical Report for Muriatic Acid, discussing Storage and Handling.

C. HAZARDS INFORMATION — Inhalation (continued)

LC_{50} (rat): 3124 ppm/1 hour. 0.13 to 0.2% concentration in air is lethal to humans in a few minutes — Reference (d).

Information (hazards, precautions, first aid, etc.) is abbreviated. More detailed information is contained in references found in Section J.

These products are not for drug use. Not for food use unless product is labeled "food grade".